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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/694,666  
Filing Date: October 27, 2003  
Appellant(s): CHRISTOPHER ET AL.

W. Brinton Yorks, Jr. Reg. No. 28,923  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 5/17/17 appealing from the Office action mailed 6/06/06.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

6,099,471	Torp et al.	8-2000
4,501,279	Seo	2-1985

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

**Claims 9-15, 17, 19, and 23** have been rejected under 35 U.S.C. 102(b) as having been anticipated by **Torp et al (US 6,099,471)**. Torp et al anticipate all claimed features in claims 9-15, 17, and 19.

**Claim 9:** Torp et al disclose a method for displaying Doppler ultrasound image comprising receiving Doppler signal information including Doppler signal information which is not used to produce a displayed Doppler image such as strain velocity and B-mode data, processing Doppler signal information for display of a Doppler image is display 7, and analyzing Doppler signal information which is not used to produce a Doppler image to optimize at least one of the display parameters of the PRF, the color baseline, the color range polarity, or the range of color pixel values for display (col. 3, line 61 - col. 4, line 27; col. 4, line 55 - col. 5, line 10). The reliability index of Torp et al as calculated from column 7 lines 28-55 incorporates calculations based off of measured Doppler signals to produce data which is not displayed, but rather used to optimize parameters for display of ultrasound data.

**Claims 10-15, 17, 19, and 23:** Torp et al further disclose that the additional Doppler information processing includes M-mode image, colorflow, velocity profile, power setting, color intensity and range, continuous scanning of the region of interest, and spectral representation of the Doppler flow information (col. 7, line 54 - col. 8, line 48) which is optimized and scaled by the reliability index as mentioned above from column 7 lines 28-55.

**Claim 16** has been rejected under 35 U.S.C. 103(a) as having been deemed unpatentable over **Torp et al in view of Seo (US 4,501,279)**.

Torp et al substantially disclose all claimed features in claims 9 and 23. However, Torp et al do not explicitly disclose that the cyclic nature of PRF scan is applied with heart or cardiac cycle. However, the cardiac gating is used to represent the motion of the region of interest based on the cardiac cycle to display the parameters of Doppler information is well known in the art as demonstrated by Seo. Seo specifically disclose that the blood flow Doppler information is displayed with heart cycle parameter that causes periodic movement (Col 1 Line 55- Col 2 Line 20, Col 3 Line 18- Col 4 Line 64). Therefore, it would have been obvious to one having an ordinary skill in the art at the time the invention was made to apply the teachings of Seo's Doppler and heart cycle parameter with Torp et al's method described above to incorporate cardiac gating in an assessment of patient cardiac health.

#### **(10) Response to Argument**

Regarding argument **A**, that the Torp et al reference does not disclose optimizing imaging parameters with Doppler data that is not used to produce images, Examiner respectfully disagrees.

The affidavit filed on 12/1/06 under 37 CFR 1.131 has been considered but is ineffective to overcome the Torp et al reference.

While it is accepted that Torp et al does indeed use Doppler echoes for generation of strain images, it still holds true that Torp et al does perform calculations for optimizing the imaging parameters with the Doppler data which is acquired. Specifically, the Torp et al patent discloses on column 7 lines 38-55 that a reliability index is calculated based on Doppler echo values (equation 11) and is compared to a threshold to remove noise and to modify the color scale which is used to display the strain velocity. These "unused" values of the reliability index are not displayed in the strain image, but supplement the imaging process to allow the operator to acquire and display accurately scaled Doppler echo images.

With regard to the argument that Torp et al. does not provide Doppler signal information which is not used to produce a displayed Doppler image, Examiner respectfully disagrees. Torp et al. again cite on column 7 lines 38-55 that a reliability index module may use a reliability index  $ri(r)$  to compare the value of reliability, which uses portions of the Doppler echoes, to a threshold for the purpose of removing noise and adjusting color scale of the display of Doppler signal data as strain velocity. The calculated data of the reliability index is a guide or a means which is able to determine the accuracy of the data. If data points are noisy, the reliability index will indicate that certain values are poor and throw them out. If the reliability of the calculation ( $ri$ ) is a low value as compared to a threshold then the saturation of color can be adjusted to allow for an improved representation of the Doppler data which is used for imaging.

Regarding argument **B**, that display optimization of parameters is not disclosed by the combination of Torp et al in view of Seo, Examiner respectfully disagrees.

Seo is not relied upon for the optimization of a display using undisplayed Doppler information for display optimization, rather the Torp et al patent is recited as disclosing that information. Appellant seems to acknowledge that cardiac gating, which is the purpose of the Seo reference, is indeed well-known in the art at the time of the invention.

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Joel M Lamprecht/

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